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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Magalie R. Salas, Esq.
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: CC Docket Nos. 00-218 & 00-251

In the Matter of Petition of AT&T Communications of Virginia, Inc., TCG Virginia, Inc., ACC National Telecom Corp., MediaOne of Virginia and MediaOne Telecommunications of Virginia, Inc. for Arbitration of an Interconnection Agreement With Verizon Virginia, Inc. Pursuant to Section 252(e)(5) of the Telecommunications Act of 1996

In the Matter of Petition of WorldCom, Inc. Pursuant to Section 252(e)(5) of the Communications Act for Expedited Preemption of the Jurisdiction of the CC Docket No. 00-218 Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon Virginia Inc., and for Expedited Arbitration

Dear Ms. Salas:

Enclosed please find an original and three (3) copies of the public version of the Joint Initial Post-Hearing Brief Of WorldCom, Inc and AT&T on Pricing Issues. Eight copies of the proprietary version of the brief are being forwarded to the Commission staff in this matter, and to Verizon as well. The proprietary version is being served electronically on the parties.

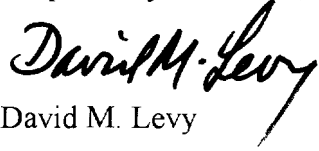
An accompanying cd-rom is being provided to Aaron Goldschmidt of the Commission Staff and to Ms. Catherine Ronis and Mr. Christopher Huther, counsel for Verizon.

Thank you for your consideration in this matter.

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December 21, 2001
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Respectfully submitted,


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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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Jurisdiction of the Virginia State Corporation)	
Commission Regarding Interconnection Disputes with)	
Verizon Virginia Inc., and for Expedited Arbitration)	
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Petition of AT&T Communications of Virginia Inc.,)	
Pursuant to Section 252(e)(5) of the)	CC Docket No. 00-251
Communications Act for Preemption of the)	
Jurisdiction of the Virginia Corporation)	
Commission Regarding Interconnection Disputes)	
With Verizon Virginia Inc.)	

**JOINT INITIAL POST-HEARING BRIEF OF WORLDCOM, INC.
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BA/NYNEX Merger Order	<i>In re NYNEX Corp. and Bell Atlantic Corp. for Consent to Transfer Control of NYNEX Corp. and its Subsidiaries</i> , Memorandum Opinion and Order, 12 F.C.C.R. 19985 (1997).
Line Sharing Order	<i>In re Deployment of Wireline Services Offering Advanced Telecommunications Capability</i> , CC Docket No. 98-147 and <i>In re Implementation of the Local Competition Provisions of the Telecommunications Act of 1996</i> , CC Docket No. 96-98, Third Report and Order in CC Docket No. 98-147 and Fourth Report and Order in Docket No. 96-98, 14 F.C.C.R. 20912 (1999).
Local Competition Order	<i>In re Implementation of the Local Competition Provision in the Telecommunications Act of 1996</i> , First Report and Order, 11 F.C.C.R. 15499 (1996).
Reciprocal Compensation Order	<i>In re Implementation of the Local Competition Provisions in the Telecommunications Act of 1996; Inter-Carrier Compensation for ISP-Bound Traffic</i> , Declaratory Ruling in CC Docket No. 96-98 and Notice of Proposed Rulemaking in CC Docket No. 99-68, 14 F.C.C.R. 3689 (1999), <i>vacated</i> , <i>Bell Atlantic Tel. Co. v. FCC</i> , 206 F.3d 1 (D.C. Cir. 2000).
Supplemental Order	<i>In re Implementation of the Local Competition Provisions of the Telecommunications Act of 1996</i> , Supplemental Order, 15 F.C.C.R. 1760 (1999).
UNE Remand Order	<i>In re Implementation of the Local Competition Provisions of the Telecommunications Act of 1996</i> , Third Report and Order and Fourth Further Notice of Proposed Rulemaking, 15 F.C.C.R. 3696 (1999).
Universal Service First Order	<i>In re Federal-State Joint Commission on Universal Service</i> , First Report and Order, 12 F.C.C.R. 8776 (1997).
Universal Service Fifth Order	<i>In re Federal-State Joint Commission on Universal Service</i> , Fifth Report and Order, 13 F.C.C.R. 21323 (1998).
Universal Service Tenth Order	<i>In re Federal-State Joint Commission on Universal Service</i> , Tenth Report and Order, 14 F.C.C.R. 20156 (1999).
Universal Service 12/18/01 Order	<i>In re Federal-State Joint Commission on Universal Service</i> , CC Docket No. 96-45 (Dec. 18, 2001)

**JOINT INITIAL POST-HEARING BRIEF OF WORLDCOM, INC.
AND AT&T ON PRICING ISSUES**

INTRODUCTION AND EXECUTIVE SUMMARY

AT&T¹ and WorldCom, Inc., respectfully submit this initial joint brief in support of the non-switch-related pricing proposals in their respective Petitions for Arbitration filed with the Commission on April 23, 2001.²

The parties have presented the Commission with a stark choice. AT&T and WorldCom have provided models and inputs for unbundled network elements (“UNEs”) and non-recurring charges (“NRCs”) that faithfully adhere to the Commission’s total element long run incremental cost (“TELRIC”) regulations, and that in particular adopt many of the modelling and input choices that the Commission itself made when it used forward-looking long-run pricing principles to develop cost inputs in its Universal Service rulemakings.³ Verizon has a lot to say about the AT&T/WorldCom recurring and non-recurring cost models, but it does not deny that they are TELRIC models.

Verizon, in contrast, has provided a grab bag of models and inputs that in theory are designed to measure costs it anticipates incurring not over the long run, but over the next several years, a short run period in which its costs are severely constrained by the configuration of its existing network. In fact, its cost studies frequently are not forward-looking even in that

¹ The AT&T entities sponsoring this brief are AT&T Communications of Virginia, Inc., TCG Virginia, Inc., ACC National Telecom Corp., MediaOne of Virginia and MediaOne Telecommunications of Virginia, Inc. (together “AT&T”).

² Pursuant to the Staff’s Order of December 3, 2001, pricing issues related to switching will be briefed initially on January 10, 2002.

³ See, e.g., *Universal Service Fifth Order*, *Universal Service Tenth Order*.

limited, non-TELRIC sense: its recurring and non-recurring cost studies, in particular, do little more than reflects Verizon's embedded costs. Because Verizon's methodology is a short-run methodology, its cost studies necessarily do not reflect efficient network design, but instead model Verizon's existing network design. Not even its own witnesses would testify that Verizon's collection of models conformed to the Commission's TELRIC rules; indeed they acknowledged that Verizon's models violate Verizon's own understanding of TELRIC. Verizon's defends its models not as an attempt to comply with TELRIC, but as an attempt at "giving the Commission a second chance" to correct the error it made by adopting TELRIC in the first place. Tr. 3238 (Hausman).

As we show below, Verizon's criticisms of TELRIC are no more persuasive now than when they were first aired in 1996. More fundamentally, the Commission's job in this proceeding is not to re-consider its 1996 judgement to adopt TELRIC, but to apply TELRIC faithfully to the record developed here, as the Virginia Commission would have been obliged to do had it chosen to arbitrate this dispute. When the Commission does so, it will adopt the AT&T/WorldCom model and inputs.

Much is at stake here. These modelling and input differences yield vastly different network element prices, and the Commission's decision will in turn profoundly affect the competitive landscapes in Virginia. Here, in brief, is what the parties propose for loops, the largest cost element for UNE-P entry:

Table 1

Loop Costs (per month)	Synthesis Model Forward-Looking Costs ⁴	Verizon's Model with Forward- Looking Inputs ⁵	Verizon's Embedded Model Rates ⁶
Density zone 1	\$5.38	\$4.98	\$17.86
Density zone 2	\$7.34	\$7.37	\$26.31
Density zone 3	\$14.81	\$11.77	\$43.45
Average	\$6.58	\$6.18	\$22.33

As these numbers show, the parties' modeling and input differences matter. Based on the evidence, the forward-looking cost, on a statewide average, for the unbundled local loop should be under \$7.00 per line per month. But Verizon proposes loop rates *over three times* higher than that. Its proposed average loop rate is nearly double the current average rate, and all by itself is more than the cost of retail phone service in the state. Competitors could not offer customers a dead phone line for the cost that Verizon provides them complete retail service.

And Verizon should not be allowed to make up in NRCs what it will claim to have "lost" in loops and other UNEs. Verizon's NRC model is replete with embedded costs, embedded technology and double counting of costs. It should be rejected. The NRC associated with migrating an existing customer from Verizon to a CLEC using UNE-P is emblematic of the differences in the models. A UNE-P migration involves no more than a computer record change and virtually never any manual work by Verizon in processing and provisioning the order. The AT&T/WorldCom model appropriately determines that the forward-looking cost of such a change is \$0.27 per order. The Verizon model calculates an embedded cost of \$0.83 for a service order charge; \$4.04 for a provisioning charge and, it appears, \$9.44 for a manual surcharge. These are plainly not cost-based changes.

⁴ AT&T/WorldCom Response to 12/10/01 Staff Record Request, Install A.

⁵ Restated Verizon rates, attached hereto.

⁶ Verizon File VAFCCRECSUMMr1101.xls (11/1/01).

While the Commission here is acting in Virginia's stead, and as a formal matter is doing nothing more than setting Virginia rates pursuant to FCC pricing regulations, the ramifications of this decision will not stop at Virginia's borders. This Commission obviously is in a unique position to provide guidance on the appropriate construction of TELRIC. Other states are closely watching this proceeding.

Guidance is critically needed. In state after state, the ILECs have done what Verizon has done here – vigorously disputed virtually every tenet of TELRIC, promoting models and inputs that are TELRIC in name only, and proposing sky-high rates designed to shoot down competition before it starts. Indeed, nearly identical cost cases are currently being litigated in Maryland and Pennsylvania, and throughout the country, ILECs are promoting cost studies featuring similar non-TELRIC models and inputs. As a result, State commissions have had to confront testimony that conflicts on virtually every point, set out in a voluminous record that quickly overwhelms limited state resources. Faced with an impossible task, states have frequently thrown up their hands, split the difference between the parties and called the result TELRIC. Looking for comfort where there is none to be found, they then turn to other states that have done the same thing, and find their compromise results to be “validated.”

These compromise verdicts now have taken on an unfortunate life of their own. Rates have generally declined over time, not in reflection of declining costs, but out of a recognition that the first “compromise” rates were far too high to permit competitive entry. And in the fullness of time, these “compromise” rates might edge down to a level that permits a modicum of competition to develop, if there were any carriers left to develop it, for that is the result that most states do in fact want to accomplish.

But compromise TELRIC is not TELRIC at all, and the halting evolution towards competitive rates is exactly the opposite of the “jump start” that Congress required in the 1996

Act. An process of top-down result-oriented rate setting, groping over time toward a level where competition might survive, is also the very opposite of what the Commission mandated in the *Local Competition Order*.

TELRIC, after all, is at its most basic level predicated on the judgement that the actual cost of telephone facilities can best be calculated from the ground up, by relying on the universally accepted economic assumption that prices in real competitive markets are based on forward-looking costs that reflect what it would currently cost to provide the desired functionality. Such ground-up cost-based pricing was chosen by Congress as an alternative to the top-down rate-of-return method of setting rates that the 1996 Act expressly rejected. When rate-makers invoke the spirit of “compromise,” point to ILEC revenue requirements, and make adjustments to the bottom line after glancing over their shoulders at other states that have acted in a similar manner, they are thus engaged in precisely the enterprise that TELRIC was designed to avoid.

This Commission is in a perfect position to put an end to such parody TELRIC. FCC staff can analyze conflicting evidence, resolve disputes based on its informed understanding of TELRIC principles, and construct rates from the ground up as TELRIC requires. And when that process yields a result, the Commission should embrace it as a true reflection of cost, no matter how it compares to the proposals of the various parties, or to rates adopted through compromise or through some general notion of playground justice.

WorldCom and AT&T have no right to expect that the rates adopted through this process will exactly mirror those they have proposed, or that the Commission will agree with them on each and every one of the myriad of input choices that produce a rate. But we do have the right to have the Commission review the conflicting evidence, make judgments based on its understanding of TELRIC, and adopt rates based on that evidence and those judgments without

regard to compromise calculations, unprincipled comparisons to existing rates, or a similarly unprincipled desire to allow Verizon to recover what it claims to be its embedded costs.

Such cost-based rates will come not a moment too soon. All of the working OSS, meaningful performance standards, and richly detailed interconnection agreements in the world mean nothing if the goods that are offered for sale are too expensive to buy. Pricing is the most substantial remaining barrier to competitive local telephone markets. No one disputes that there are essential facilities in the telephone network, and that without access to those facilities at cost-based rates no local residential competition will develop. TELRIC rates will permit competition to develop in Virginia, and will give other states the ability to cut through the fog created by ILEC embedded cost studies and insupportable inputs, and to develop their own true cost-based rates.

Indeed, more than local competition is at stake. In the few states where there has been competitive local entry by interexchange carriers, and in those states where there has been ILEC entry into the in-region long-distance market, it has become clear that many customers want all of their telecommunications services from a single carrier. As more and more Bell Companies win in-region long-distance authority, unless competitors are able to offer a competing bundle of services, those customers will have only one choice for that bundled service. What was not a credible prospect just a few years ago is now a commonplace thought: unless cost-based rates are established promptly throughout the country, the Commission faces the very real risk of overseeing the remonopolization of the residential telecommunications market. That was hardly what Congress had in mind when it passed the '96 Act. The Commission can take a great step towards keeping that from happening by applying its TELRIC rules faithfully here in Virginia.

The Recurring and Non-Recurring Cost Studies

In what follows we show that AT&T and WorldCom presented the Commission with two detailed and accurate cost studies that indisputably are consistent with TELRIC methodology. AT&T and WorldCom have also thoroughly reviewed Verizon's cost studies, offering specific criticism of many of Verizon's inputs, and providing record evidence that reflects corrected inputs to Verizon's study. In contrast, Verizon improperly continues to use models and inputs based on its embedded or historical network and costs and, consequently, produces costs that are not forward-looking. Moreover, Verizon has not offered specific criticisms of most of the AT&T/WorldCom inputs to the Synthesis Model,⁷ and has made no effort to restate the inputs used in the Synthesis Model. As a result, when the Commission concludes, as it must, that the only TELRIC-compliant recurring cost study presented to it is the Synthesis Model, it will find that the record supporting the AT&T/WorldCom inputs to that study is not countered by any detailed information that would support different inputs.⁸

The Synthesis Model is the product of years of study, analysis and improvement in response to rigorous third-party scrutiny by the FCC, state commissions, and incumbent LECs. The Model relies on cost inputs adopted after careful consideration by the FCC itself. It relies on engineering principles that are consistent with a forward-looking network. This means, for

⁷ Throughout this brief, the term "Synthesis Model" refers to the version of the Model submitted by AT&T/WorldCom witness Brian Pitkin. The version of the model developed by the Commission is referred to as the FCC Synthesis Model or Commission Model.

⁸ In this regard, it is critical to note that, as to many inputs, the values proposed by the parties for the Verizon model cannot be simply inserted into the Synthesis Model because they serve different functions in the two models. For example, the fill factors in the Verizon model already includes breakage in the fill, which represents the total unused capacity in their network, while in the Synthesis Model fill does not include breakage, which is calculated separately. So if the Commission chooses to adopt the Synthesis Model, Verizon has put no evidence on the record that would support a fill factor other than the one proposed by AT&T and WorldCom.

example, that the manner of designing and building loops to a service area is not identical to the embedded design of Verizon's outside plant today. This, of course, is to be expected. An embedded design often may be inefficient and would not be used today because of demographic changes and/or technological changes. The Synthesis Model also relies on precise demographic data to determine the location of actual customers throughout Verizon Virginia's service area. These demographic data are critical to ascertain the proper forward-looking economic cost of the loop. In contrast, Verizon relies on a "sampling" exercise that reflects its embedded network (in some cases, as of nearly a decade ago) and historical inefficiencies.

Adoption of TELRIC inputs is if anything even more important than adoption of a TELRIC model. In what follows we show as well that AT&T and WorldCom presented overwhelming evidence that even the flawed Verizon models, when corrected to reflect key forward-looking technology and cost inputs, produced costs consistent with the TELRIC-compliant Synthesis Model.

A summary of the critical input differences between AT&T/WorldCom TELRIC studies and Verizon's embedded study is presented in Table 2 below:

Table 2

	Synthesis Forward-Looking Model	Verizon Virginia's Embedded Model
Cost of Capital	9.54%	12.95%
Cost of Equity	10.42%	14.75%
Cost of Debt	7.86%	7.55%
Debt/Equity ratio	34.5/65.5	25/75
Depreciation Lives	FCC/SCC process	GAAP/accounting lives
Aerial Metallic Cable (M&R Exp./inv. factor)	6.69%	14.09%
Common costs	8.00%	7.98%
<i>Loop Costs</i>	-	-
Loop Lengths	Based on VA wire centers, customer location, engineering criteria and efficient network design	Relies on 1993 – 1995 survey
Cable Size	Based on lines served, forward-looking fill factors and commercially available cable sizes	Feeder – Relies on 1993 – 1995 study of embedded network and 2001 line counts Distribution – Based on number of working lines within each distribution area and subsequently increased by utilization factor
Support Structure Mix	(avg) 62.4% buried; 36.1% aerial; 1.5% underground	Relies on 1993-95 survey Feeder – 25% buried; 22% aerial; 53% underground Distribution – 44% buried; 38% aerial; 18% underground
Cable Unit Costs	FCC Data	Costs based on “actual” installed cable costs from 1997 - 1999
Copper/Feeder Breakpoint	Most economic choice of copper and fiber selected on case by case basis	Based on Verizon “sensitivity” runs of its embedded cost model
Max. Dist. Length	n.a. (maximum copper loop length is 18,000 feet, <1% exceed 12,000 feet)	12,000 feet for copper loops
Dist. Fill Factor	Target fills of 50%-75% = 52.5% statewide average effective fill	40.30% effective fill
Copper Feeder	Target fills of 70%-82.5%	56.90%
Fiber Feeder Fill Factor	Target fill of 100% before breakage	41.80%
DLC Fill Factor	70% - 82.5%	Plug-In – 80% Common – 56.9%
DLC Technology	100% GR-303	12:15% IDLC GR-303 57.85% IDLC TR-008 30.00% UDLC

	Synthesis Forward-Looking Model	Verizon Virginia's Embedded Model
Support Structure Sharing	Yes. Phone co. share with utility and cable cos.	Yes. Phone co. share poles only
Pole placement	Based on FCC data varied by density zone	168 feet
Pole costs	Based on FCC data varied by density zone	\$1,006 per pole
Drop length (avg)	77.4 feet	N/A

The AT&T/WorldCom NRC Model likewise establishes the forward-looking NRCs for Virginia. The NRC Model is based on a straight-forward principle: an efficient, forward-looking firm would use primarily electronic, mechanized processes. And, unlike Verizon, AT&T and WorldCom base NRCs on the same forward-looking network that is the construct underlying its recurring cost calculations. Verizon's NRCs, on the other hand, reflect historic costs and embedded practices, such as manual processing of orders, which cannot properly be included in a TELRIC analysis. And Verizon's NRC model is based on an entirely different and incompatible set of assumptions than its recurring cost model, making its use in conjunction with Verizon's recurring cost model doubly unreliable.

This brief is organized as follows: Part II sets forth and defends AT&T and WorldCom's proposed recurring rates; Part III addresses non-recurring costs and rates; and Part IV (on behalf of AT&T only) discusses the wholesale discount. Within each section, AT&T and WorldCom first discuss general methodological issues, and then discuss the extent to which each of the competing models is faithful to the basic requirements of TELRIC. Following that is a discussion of critical inputs, factors and expenses upon which the parties rely to generate their rates.

I. RECURRING COSTS OF UNBUNDLED NETWORK ELEMENTS

A. The Requirements of the TELRIC Regulations.

AT&T and WorldCom's models and inputs fully comply with the FCC's TELRIC rules, while Verizon's plainly do not. Moreover, Verizon's criticisms of TELRIC are both irrelevant to this proceeding and entirely without merit.

1. The FCC's TELRIC Rules.

The Commission's TELRIC rules are codified at Section 51.505, and state that the "total element long-run incremental cost of an element is the forward-looking cost over the long run of the total quantity of the facilities and functions that are directly attributable, or reasonably identifiable as incremental to, such element, calculated as a given the incumbent LEC's provision of other elements." The rules also make a critical efficiency assumption, mandating that the TELRIC "should be measured based on the use of the most efficient telecommunications technology currently available and the lowest cost network configuration, given the existing location of the ILECs' wire centers." 47 C.F.R. § 51.505(b)(1). And, lest there be any doubt about how efficiency is to be measured, the rules go on to specify that embedded costs, "the costs that the incumbent LEC incurred in the past and that are recorded in the incumbent LEC's books of accounts," "shall not be considered in a calculation of the forward-looking economic cost of an element." *Id.* § 51.505(d)(1).

In the *Local Competition Order*, the Commission explained that its adoption of the rule's efficiency assumption, and its rejection of embedded cost as a basis for costing, meant that it was *rejecting* the standard proposed by Verizon and its fellow incumbents, who through their trade organization had proposed that a TELRIC model should "measure the forward-looking economic costs of existing networks, not the costs of fictitious networks." *Local Competition Order* ¶684 (quoting USTA Reply Brief at 19). As the Commission explained, this

was essentially an embedded cost proposal, and so was inconsistent with its rules. *Id.* The FCC adopted its ground-up forward-looking costing methodology after considering the ILECs' proposed alternatives because it believed that TELRIC best captured the economic costs of the ILEC network elements, and that alternatives based in any way on valuing the ILEC's actual facilities would likely yield less accurate and overstated cost results that would frustrate competitive entry.⁹

2. The AT&T/WorldCom Models and Inputs Comply With TELRIC.

Not even Verizon disputes that AT&T and WorldCom's cost studies comply with these TELRIC requirements. AT&T and WorldCom relied upon the FCC's own cost models developed for the purpose of setting universal service subsidies, adjusted so that they could properly cost unbundled network elements. These are bottom-up economic-engineering costing models designed to comply with the Commission's understanding of forward-looking long-run incremental cost modeling. The models estimate the costs that an efficient firm would incur to provide unbundled network elements and interconnection services, assuming the flexibility to use the most efficient technology and network configurations now commercially available on the market, constrained only by the assumption that a competing supplier must continue to use Verizon's existing wire center locations. The models thus estimate, as TELRIC requires, the costs that an efficient supplier would incur, over the long run, to supply the entire output of network elements currently produced by Verizon. The inputs to the AT&T/WorldCom model

⁹ Courts have similarly rejected Verizon's view of TELRIC. "Past practice alone, without some more tangible measurement relating it to an efficient, forward-looking system cannot be the basis for setting forward-looking rates as required by the Act." *AT&T Communications of New Jersey, Inc. v. Bell Atlantic-New Jersey, Inc.*, Civ. No. 97-5762 (KSH), Opinion dated June 2, 2000, slip op. at 34. The "current state of Bell's network is irrelevant for purposes of a long-run cost analysis." *Bell Atlantic-Delaware, Inc. v. McMahon*, 80 F. Supp. 2d. 218, 238 (D. Del. 2000).

too are frequently derived from FCC inputs developed for the Synthesis Model, and are in all cases designed to be forward looking.

3. Verizon's Models and Inputs Do Not Comply with TELRIC.

Verizon's studies and inputs, in contrast, are TELRIC in name only. In most respects, Verizon's recurring and non-recurring studies do exactly what the Commission rejected when it adopted TELRIC over Verizon's objections: they take as a given Verizon's existing network in all of its particulars, and then model the changes and additions Verizon asserts it will make to that network over the next three years.¹⁰ Verizon's models thus do exactly what the FCC expressly forbade when it rejected the ILECs' pricing proposals. In other respects, the models are not even forward-looking in this minimal sense. For example, loop lengths and copper feeder size are based on those that Verizon had in place in the mid-1990's, and the expenses modeled are based on Verizon's network expenses in 1999.

Because the models are grounded in Verizon's existing network, they do not merely leave existing wire centers in place; they start with every particular of Verizon's network in place. And, because they are not long-term studies but instead look forward only three years, a period in which Verizon will be powerfully constrained in what equipment it purchases by equipment it has already deployed, the network design they end with also adopts many of the particulars of Verizon's existing network. The models and inputs thus are not intended to model a hypothetical efficient network based on Verizon's existing wire centers, but Verizon's "actual expected costs," or the costs of how Verizon's network is "actually deployed." As such,

¹⁰ At that point, the recurring and non-recurring studies make differing assumptions. The recurring study takes the additions it models, and then uses those additions as a proxy for a network large enough to serve total demand. The non-recurring study models what Verizon asserts its actual network will look like in three years. *See* Part III, *infra*.

Verizon's models include precisely what TELRIC excludes: embedded costs, short-run costs, uneconomic cost, and costs that are unattributable to UNEs.

The feature of Verizon's models that most obviously depart from TELRIC is that they are not long-run models. TELRIC regulations require that cost studies be based on "forward-looking costs over the long run." § 51.505(b). In the *Local Competition Order*, the Commission defined "long run" to be "a period long enough so that all of a firm's costs become variable or avoidable," and cited to William Baumol's definition in *Economic Theory and Operations Analysis*, to the effect that the long run "is a period so long that all of a firm's present contracts will have run out, its present plant and equipment will have been worn out or rendered obsolete and will therefore need replacement." *Local Competition Order* ¶ 677 & n. 1682 (quoting Baumol). As Baumol went on to say in the quoted text, "the long run is a period of sufficient duration for the company to become completely free in its decisions from its present policies, possessions and commitments." Baumol contrasts the long run with an "in between period" in which a firm "will find its options circumscribed to some extent by previous commitments." *Economic Theory and Operations Analysis* at 290.

As described above, Verizon's studies do not look at the long-term. Purchases made over the next three years obviously are powerfully constrained by the specific equipment currently in Verizon's network, so that in making purchases over that time frame Verizon will, in Dr. Baumol's words defining an intermediate term study, "find its options circumscribed to some extent by previous commitments." To pick one example of many, most of Verizon's existing switches are not configured to accept loops using the most up-to-date integrated digital loop carrier GR-0303 interface, and Verizon's studies ignore the cost savings inherent in deploying GR-303 even though any carrier deploying a new network would take advantage of that more efficient technology. Verizon Exh. 117 (Shelanski/Tardiff Surreb) at 27.

But to model choices Verizon will make over the next three years in purchasing loops based on constraints imposed by Verizon's existing base of switches plainly is to model a period in which Verizon "will find its options circumscribed to some extent by previous commitments," and is not to consider a period in which "its present plant and equipment will have been worn out or rendered obsolete." It is, in sum, plainly not a long-run model. The result of this methodological choice is that Verizon has not modeled the most efficient technology. Thus, the fundamental purpose of TELRIC – to value assets by modeling the most efficient technology that can provide the functionality provided by those assets – is fatally compromised.

Verizon has offered two arguments in defense of its intermediate term model, but neither has the least bit of merit.

First, it argues that it has really modelled the long-run, since "all costs are avoidable" in the sense that, for example, Verizon could have chosen to model a world in which it replaced all its switches, if that had been the efficient thing for Verizon to do. As one of its witnesses stated, "If it would be cost minimizing for Verizon to throw away its existing plants and put in all GR303, the joint cost minimizing decision across those two elements, that could happen in [Verizon's] model." Tr. 2903 (Shelanski).

This argument is make-weight. To consider whether changes to an existing network would be efficient obviously is to be constrained by the existing network. The very point of a long-run model is to eliminate such constraints. In a long-run study, costs are variable because, as Professor Baumol states, all "present plant and equipment will have been worn out or rendered obsolete and will therefore need replacement." Verizon's claim that its study is in fact long-run is just word play.

Second, Verizon also argues that its study is long-run in the sense that even though its purchases over the next three years are severely constrained by its existing network, a

three-year study is as long a term as is possible, since long-run studies require a balance between “varying as many inputs as possible,” and identifying a period of time “not so long that the proper future network configuration is speculative.” Verizon Exh. 101 (Shelanski Dir.) at 17-18. This is so, Verizon asserts, because even a long-run study is constrained by the requirement that “the firm must be able reasonably to predict how an input should be assumed to change in the model, it must be able rationally to calculate what an input should vary to.”¹¹ *See also id.* at 29 (“This risk [of not being able to anticipate future environment] must be balanced against the theoretical long-run prescription of making all inputs variable”). No period longer than three years is possible, in Verizon’s view, because over any longer period, the modeler would be unable to answer the question “what will be the optimal switching technology several years from now?” *Id.* at 29.

But Verizon points to no economic literature, beyond Dr. Shelanski’s testimony in this case, that has ever defined the “long run” to involve a balance between the period of time at which all inputs may be varied, and the shorter period in which the kind of change modeled could be anticipated. Certainly, the definition adopted by the FCC involved no such balancing. Moreover, the FCC regulations specify that the equipment to be modeled is the most efficient technology *currently* available, so Verizon’s claim that it could not model a true long-run period because it would not know what equipment would be available “in the long run” attacks a straw

¹¹ This is particularly absurd because the incremental investments over three years produce a mix of technologies for loops (including an extraordinarily high percentage of fiber and DLC) that Verizon does not anticipate having as its average blend of technology at *any* point in the foreseeable life of its assets. Moreover, as soon as the useful life of Verizon’s existing switches is over, it is clear that Verizon foresees using some DLC technology other than TR-008, which Telcordia had not even included in the SCIS model as a technology to be used with the new Lucent switching modules that Verizon is deploying.